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REMARKS

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The drawings are objected to for the reasons noted in the official action for failing to show all of the features specified in the claims. Claim 13 has been amended to recite features and subject matter clearly labeled in the previous drawings and therefore all of the raised drawing objections are believed to be overcome by the amendment. If any further amendment to the drawings is believed necessary, the Examiner is invited to contact the undersigned representative of the Applicant to discuss the same.

Claim 16 is objected to for the reason noted in the official action. The objected to claim is suitably revised to overcome the noted informality.

Claim 13 is rejected under 35 U.S.C. § 101, for the reasons noted in the official action. Claim 13 has been accordingly amended to eliminate the allegedly inoperative subject matter as noted by the Examiner. As the claim is now believed to clearly set forth the unambiguous subject matter of the present invention, the Applicant believes this rejection to be overcome. If any other amendment is necessary to overcome the raised drawing objections or 35 U.S.C. § 101 rejections the Examiner is courteously invited to contact the undersigned to discuss the same. As the present amendments merely address informalities and/or redundant claimed subject matter and that these amendments are not entered to overcome any particular art of record, these amendments are not believed to raise new issues requiring further search and/or consideration.

Claims 13-17 are rejected under 35 U.S.C. § 112, first paragraph, for the reasons noted in the official action. The inadequate written description rejection is acknowledged and respectfully traversed in view of the following remarks.

The Examiner asserts that the limitation as found in claim 13 "to cut a counter profile in the hub (line 21)" is not supported in the original disclosure. Applicant's Paragraph [023] of the originally filed disclosure clearly states that the "... toothed segment 5 ... then cuts a counter

6/13/06 - 1:23 PM

- 4 -

10/524,812

profile in the hub 3". Additionally, regarding the allegation that the limitation, "and the first centering segment . . . of the front center segment (A)" is not supported by the specification, the Applicant has amended claim 13 to more clearly recite the specific elements of the claim.

Also, the Applicant notes that the translation of the term "Gegenprofile" which is currently translated in the specification as "counter profile" can also be translated as "mating profile" which may be more accurate relative to the above noted description. If the Examiner believes that such an amendment will further clarify the claims and the operability of the present invention as recited, the Applicant is certainly willing to consider such an amendment. In the meantime, claim 13 has thus been amended to eliminate the redundant subject matter of ". . . the first centering segment (A) . . ." and in view of the above is now believed to be supported by the original disclosure, thereby overcoming the remaining § 112, first paragraph, rejections.

Claims 13-17 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Applicant has amended claim 13 and respectfully traverses the raised indefiniteness rejection in view of the following remarks.

As best the Applicant understands the indefiniteness rejection, the Examiner indicates that it is unclear how a counter profile can be cut into a hole 11 and simultaneously provide an interference fit. As the counter profile does not require any particular diameter to be cut relative to the cutting toothed segment 5, the Applicant notes that the counter profile is formed through mainly plastic deformation. In other words, the counter profile as cut by the toothed segment 5 does not completely bore out the hole 11. Therefore, after such plastic deformation, the elastic deformation as necessary to produce a interference fit can still occur between the inner diameter of the hole 11 and the outer diameter of the toothed segment 5.

6/13/06 - 1:23 PM

- 5 -

10/524,812

In other words, the intermediate toothed segment can deform the hole through both plastic and elastic deformation. A counter profile can be cut into the hub by plastically deforming the material to some extent. Also, elastic deformation in the hub would still be present and would confer stress upon the shaft, creating an interference fit. Applicant therefore believes that a counter profile and interference fit can exist simultaneously in the present invention and as recited in claim 13. In any event, if this language continues to be impediment to allowance of this case, the Applicant would consider removing the objected to language. If the Examiner believes that removing this language would be helpful to the allowance of this case the Examiner is again courteously invited to contact the undersigned Attorney of Record to discuss the same.

The Applicant notes that certain claim language, for example "when the shaft is inserted . . ." is used in the claim to assist in clarifying the claimed subject matter of the structural inter-engagement of the elements to form the claimed "shaft-hub connection". As best the Applicant can ascertain there are no method steps recited in the present claims, and in any event this language has been slightly amended to more definitively recite the Applicant's claimed features to a "shaft-hub connection" which includes both the shaft (2) and the hub (3) as recited in the preamble of claim 13. If the Examiner believes that any further amendment would help clarify this aspect of the present invention the Applicant is certainly willing to consider any such amendment.

Claims 13-15 and 17 are rejected, under 35 U.S.C. § 102, as being anticipated in view of Meeker '669. The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the following remarks.

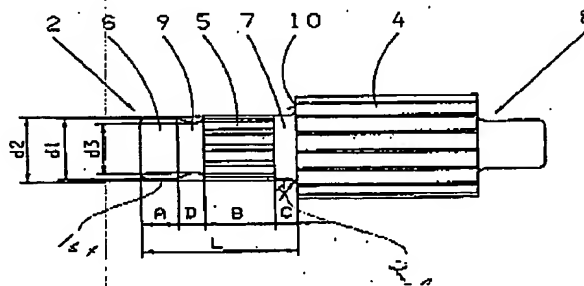
Different from the shaft-hub connection for a transmission part as recited and claimed in the Applicant's present invention, Meeker '669 relates to a manufacturing process designed to reduce work hardening in hole forming. As clearly described in the specification of

8/13/06 4:23 PM

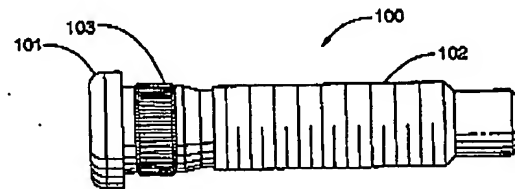
- 6 -

10/524,812

Meeker '669, this cited reference includes a wheel stud 100 with a serrated stem section 103 located between a stud head 101 and threaded shank 102. The stud 100 is pressed into a drilled flange hole and serrations formed thereon engage cooperating serrations in the hole to secure the stud 100 therein.



Different from Meeker '669, the presently claimed invention relates to a shaft-hub connection comprising one shaft end having three particular segments, and a hub having a two-step hole to receive the shaft segments. Importantly, as seen in FIG. 2 of the Applicant's specification, reproduced for the Examiner's benefit below, the three particular shaft segments include a first centering segment 6 and a second centering segment 7 of the shaft 2 which function to center an intermediate toothed segment. The intermediate toothed segment 5 is positioned between the first and second centering segments 6, 7 cuts a serrated aperture in the hub 3 as the shaft is inserted into the hole 11 of the hub 3. The joint is complete once the pinion and the hub surface come into contact.



As the examiner is aware, in order to support an anticipatory rejection under 35 U.S.C. § 102(b) the cited reference must disclose each and every feature of the presently claimed invention. Claim 13 specifically recites "a first centering segment located at a free end of the shaft having a first diameter . . .". This is certainly not the case in Meeker '669 as shown above

8/13/06 4:23 PM

- 7 -

10/524,812

in Meeker's FIG. 8 where the threaded shank 102 is not only spaced from free end of the wheel stud 100, but where the specification fails to provide any description or disclosure relevant to such a threaded shank 102 providing a centering function.

The Applicant has made a thorough review of the Meeker '669 reference and can find no disclosure, teaching or suggestion in this reference to utilize the threaded shank for the purposes of centering the wheel stud 102 for the purpose of forming a cut. If anything, the threaded shank of Meeker '669 is inserted cleanly through the stud hole 82, 92 and as discussed at column 13, lines 8-30, the serrated portion of the stem 103 engages the softened serrated stud holes. The threaded shanks purpose is to accept a lug bolt for holding a vehicle wheel to the hub 3, not for any sort of centering function in a joint, much less a transmission joint as in the present invention.

Further, Even if Meeker '669 discloses a first centering segment at 102, which the Applicant adamantly disagrees with, there is no second centering segment as specifically recited by the Applicant in claim 13 which states "a second centering segment (7) axially spaced from the first centering segment (6)". The Examiner asserts a second centering segment is shown, however the only element beyond the serrated segment 103 is the stud head 101 which merely keeps the stud from passing all the way through the stud hole. In any event, even if the stud head 101 could be interpreted as a centering device, claim 13 specifically recites "... and the second centering segment (7) and the intermediate toothed segment (5) have a same second diameter (d2) ...". As clearly seen in FIG. 8, the stud head 101 diameter is significantly bigger than the serrated segment 103. Thus, at least this specifically recited features of the present invention are disclosed, taught or suggested in any manner either inherently or expressly by the cited Meeker '669.

8/15/06 4:25 PM

- 8 -

10/524,812

As at least the above identified, and specifically claimed features of the present invention are not disclosed, taught, or suggested in any manner by the applied reference, the Applicant respectfully requests withdrawal of the anticipation rejection.

Claim 16 is rejected, under 35 U.S.C. § 103, as being unpatentable over Meeker '669. Claim 16 is dependent indirectly on independent claim 13, which in view of the above amendments and argument is believed to be allowable. The Applicant therefore respectfully requests withdrawal of the obviousness rejection.

Claims 13-17 are rejected, under 35 U.S.C. § 103, as being unpatentable over Hallberg '019 in view of Mansel '134. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

Hallberg '019 relates to a lavatory soap holder comprising a post member and a socket member wherein the post member and the socket member are interlocked with each other to form the soap holder as a whole. As clearly described in the cited specification of Hallberg '019, the joint is frictionally, or elastically engaged when the post member head 16 having a slot 17 and which is slightly larger than the recess to be engaged, is force-fitted into the narrower recess of the socket member 13. In other words it is the elastic nature of the slot 17 and the separated sides of the head 16 which provide merely an elastic material deformation.

Conversely, Mansel '134 relates to a vehicle windshield wiper system wherein a crank shaft engages a joint by entering a variable diameter hole at the smaller diameter and plastically pushing the soft hole material towards the larger diameter end of the hole. The joint is complete once the material is pushed down from the smaller diameter portion of the hole and creates positive interference with the larger diameter crank shaft.

As the Examiner is aware, in order to support an obviousness rejection based on a combination of references under 35 U.S.C. § 103, the cited references must provide some

8/3/06 1:23 PM

- 9 -

10/524,812

disclosure, teaching or motivation as required by case law, which would lead one of skill in the art to combine the references to meet the features of the present invention. As discussed above, there is a fundamental difference between the disclosure of the combined references. Specifically, Hallberg '019 discloses an elastic deformation of the head 16 into the recess, which can thus be easily removed, and Mansel '134 is solely dependent upon a plastic deformation of material, essentially a permanent deformation, in the hole to produce a hole and shaft joint. These two method and structures for joining materials are so entirely disparate that it is the Applicant's position that it is not impossible to combine these references. In fact, they actually teach distinctly away from one another since applications which include considerable forces such as moving mechanical parts require significantly stronger connections than those for holding a soap dish in a lavatory. Therefore, the Applicant believes that the references not only teach away from one another, but are probably impossible to combine based on the disclosed structure and uses between the Hallberg '019 elastic lavatory fixture which permits the parts to easily separated, and the plastic deformation in Mansel '134 which forms a rather permanent joint between the windshield wiper shaft 14 and the supporting hole 20.

Even if the Hallberg '019 and Mansel '134 references can be combined, and the Applicant adamantly does not believe that such a combination is possible, a combination of the devices and methods still fails to disclose, teach or suggest all the features of the present invention. As shown above in the Applicant's FIG. 2, and as discussed herein and throughout the specification, as well as clearly recited in the pending claim 13, the Applicant's shaft hub connection includes a novel shaft 2 having a intermediate toothed segment 5 which is the same diameter as the second centering segment 7. Claim 13 clearly recites this feature wherein "... the second centering segment (7) and the intermediate toothed segment (5) have a same second diameter (d2) ...".

06/13/2006 4:23 PM

- 10 -

10/524,812

As at least the above identified, and specifically claimed features of the present invention are not disclosed, taught, or suggested in any manner by the applied references, the Applicant respectfully requests withdrawal of the Hallberg '019 in view of Mansel '134 obviousness rejection.

Claims 13-17 are rejected, under 35 U.S.C. § 103, as being unpatentable over Orlowski (DE 4134552) in view of Mansel '134. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

Again, as the Examiner is aware, in order to support an obviousness rejection based on a combination of references under 35 U.S.C. § 103, the cited references must provide some disclosure, teaching or motivation as required by case law, which would lead one of skill in the art to combine the references to meet the features of the present invention. Orlowski '552 discloses a pinion fixture wherein the serrated perimeter of a shaft is engaged into a hole in a gear section. As noted by the Examiner, there is no disclosure, teaching or suggestion of how the hole and shaft are engaged either friction fit, interference fit or otherwise.

As stated above, Mansel '134 discloses a windshield washer apparatus that teaches the plastic displacement of material from a smaller to a larger hole radius and provides fitting when the larger hole radius is filled with the material such that positive interference is obtained. The method of plastic deformation disclosed in Mansel '134 which assumes the plastic flow of a relatively soft metal material forming the hole, could not be combined with Orlowski '552 which discloses a hole formed in a hardened gear 8. As is known in the art of gear and transmission manufacture gears must be fabricated of critically hardened steel material which tends to be stronger but more brittle, i.e., gear material does lend itself to plastic flow, but is instead significantly different in its crystallinity microstructure so as to resist plastic flow. Thus, it is the Applicant's position that there is no motivation to combine the technology of Mansel '134 to the apparatus in Orlowski '552 because of the hard materials involved in Orlowski '552.

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- 11 -

10/524,812

Even if the Mansel '134 and Orlowski '552 references can be combined, and the Applicant adamantly does not believe that such a combination is possible, a combination of the devices and methods still fails to disclose, teach or suggest all the features of the present invention. As shown above in the Applicant's FIG. 2, and as discussed herein and throughout the specification, as well as clearly recited in the pending claim 13, the Applicant's shaft hub connection includes a novel shaft 2 having a intermediate toothed segment 5 which is the same diameter as the second centering segment 7. Claim 13 clearly recites this feature wherein, "... the second centering segment (7) and the intermediate toothed segment (5) have a same second diameter (d2) ...".

As noted in the Applicant's specification this is an important feature of the present invention. As noted in Applicant's paragraph [023]

... the front segment 6, lying in joint direction with the diameter d1 at first assumes the centering until the toothed segment 5 reaches, first, the hole segment II subsequently the hole segment I and then cuts in a counter profile in the hub 3. Finally, the collar 10 of the pinion shaft 8 comes to abut on the front face 12 of the hub 3 and the jointing process is terminated. The centering segment 7 is then in the hole segment II and forms a joint fit with the diameter D2. The radius r of the centering segment 7 is here free due to the chamfered segment III. *By virtue of the centering segments 6, 7 on both sides of the toothed shaft segment 5, a play-free, precise fit, centered bearing results for the pinion shaft 8 and the pinon 4 which is important for a precise tooth contact with other gear wheels (not shown).* Emphasis Added.

As such a feature as claimed is not disclosed, taught or suggested by the references either alone or in combination, the Applicant respectfully requests withdrawal of the obviousness rejection.

6/13/06 - 123 PM

- 12 -

10/524,812

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised anticipation and obviousness rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding anticipation or obviousness rejections or applicability of the Meeker '669, Hallberg '019 and/or Mansel '134 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

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In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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6/13/06 1:22 PM

- 14 -

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